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<b>14. ABSTRACT</b>  The requirements of defence transformation have led to increased levels of interest in the area of military equipment acquisition as many nations embark on major changes in operational and organisational structures in order to meet the new needs of expeditionary operations rather than territorial defence.  Operational analysis and other model-based approaches are capable of providing valuable support to defence decision-makers addressing military equipment acquisition issues. However, this particular application domain has often been neglected compared to subjects such as planning of operations, supply chain management and logistics. In addition military equipment acquisition has mostly been considered by the military as isolated from the general economical, industrial and political environment. Recommendations on behalf of the military are almost exclusively taking into account operational criteria. The symposium therefore provides an opportunity to redress this situation by looking at multiple aspects of the problem in a broad context.						
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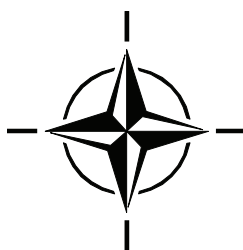
**RTO MEETING PROCEEDINGS**

**MP-SAS-080**

# **Decision Support Methodologies for Acquisition of Military Equipment**

(Méthodologies d'aide à la décision pour  
l'acquisition d'équipements militaires)

Papers presented at the Systems Analysis and Studies Panel (SAS)  
Specialists' Meeting held in Brussels, Belgium on 22 and 23 October 2009.



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# The Research and Technology Organisation (RTO) of NATO

RTO is the single focus in NATO for Defence Research and Technology activities. Its mission is to conduct and promote co-operative research and information exchange. The objective is to support the development and effective use of national defence research and technology and to meet the military needs of the Alliance, to maintain a technological lead, and to provide advice to NATO and national decision makers. The RTO performs its mission with the support of an extensive network of national experts. It also ensures effective co-ordination with other NATO bodies involved in R&T activities.

RTO reports both to the Military Committee of NATO and to the Conference of National Armament Directors. It comprises a Research and Technology Board (RTB) as the highest level of national representation and the Research and Technology Agency (RTA), a dedicated staff with its headquarters in Neuilly, near Paris, France. In order to facilitate contacts with the military users and other NATO activities, a small part of the RTA staff is located in NATO Headquarters in Brussels. The Brussels staff also co-ordinates RTO's co-operation with nations in Middle and Eastern Europe, to which RTO attaches particular importance especially as working together in the field of research is one of the more promising areas of co-operation.

The total spectrum of R&T activities is covered by the following 7 bodies:

- AVT Applied Vehicle Technology Panel
- HFM Human Factors and Medicine Panel
- IST Information Systems Technology Panel
- NMSG NATO Modelling and Simulation Group
- SAS System Analysis and Studies Panel
- SCI Systems Concepts and Integration Panel
- SET Sensors and Electronics Technology Panel

These bodies are made up of national representatives as well as generally recognised 'world class' scientists. They also provide a communication link to military users and other NATO bodies. RTO's scientific and technological work is carried out by Technical Teams, created for specific activities and with a specific duration. Such Technical Teams can organise workshops, symposia, field trials, lecture series and training courses. An important function of these Technical Teams is to ensure the continuity of the expert networks.

RTO builds upon earlier co-operation in defence research and technology as set-up under the Advisory Group for Aerospace Research and Development (AGARD) and the Defence Research Group (DRG). AGARD and the DRG share common roots in that they were both established at the initiative of Dr Theodore von Kármán, a leading aerospace scientist, who early on recognised the importance of scientific support for the Allied Armed Forces. RTO is capitalising on these common roots in order to provide the Alliance and the NATO nations with a strong scientific and technological basis that will guarantee a solid base for the future.

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# **Decision Support Methodologies for Acquisition of Military Equipment**

## **(RTO-MP-SAS-080)**

### **Executive Summary**

Operational Analysis and other model-based approaches are capable of providing valuable support to defence decision-makers addressing military equipment acquisition issues. However, this particular application domain has often been neglected compared to subjects such as planning of operations, supply chain management and logistics. In addition military equipment acquisition has mostly been considered by the military as isolated from the general economical, industrial and political environment. Recommendations on behalf of the military are almost exclusively taking into account operational criteria. Therefore this meeting was aiming to provide an opportunity to redress this situation by looking at multiple aspects of the problem in a broad context. The programme committee intended to provide a forum for participants to exchange experiences and perceptions on the way in which operational analysis or other forms of modeling and simulation can provide support to decisions relating to acquisition of military equipment within national armed forces in the context of NATO and to discuss further possible collaborative research programs.

The level of the presentations and of the discussions was excellent and stimulating. The subjects covered were acquisition procedures, simulation, selection and ranking in a multi-criteria context, Life Cycle Costing, support for the development of operational requirements, and assessment of performance. However it should be noticed that important topics like:

- Industrial, social and political aspects of military equipment acquisition models and methods,
- Standardisation within the alliance in relation to military equipment acquisition models,
- Military equipment acquisition models related to supply chain management and logistics,
- Renewal and game theoretical models for military equipment acquisition,
- Simulation models for dynamic systems in relation to military equipment acquisition,
- Fleet management and military equipment acquisition models.

Were not covered or needed a more in depth discussion.

# Méthodologies d'aide à la décision pour l'acquisition d'équipements militaires (RTO-MP-SAS-080)

## Synthèse

L'analyse opérationnelle et d'autres approches reposant sur la modélisation sont en mesure de fournir une aide précieuse aux décideurs de la Défense chargés des questions d'acquisition de matériels militaires. Cependant, ce domaine d'application particulier a souvent été négligé par rapport à des sujets comme la planification des opérations, la gestion de la chaîne d'approvisionnement et la logistique. Par ailleurs, l'acquisition d'équipements militaires a souvent été considérée par les militaires comme étant déconnectée de l'environnement général économique, industriel et politique. Les recommandations faites au nom des militaires prennent presque exclusivement en compte les critères opérationnels. En conséquence, cette réunion avait pour but de créer une opportunité de redresser cette situation en traitant les divers aspects du problème, dans un contexte élargi. Le Comité d'organisation avait voulu créer pour les participants un forum sur lequel ils puissent échanger leurs expériences et leurs sentiments sur la façon dont l'analyse opérationnelle ou les autres formes de modélisation et de simulation pouvaient apporter une aide à la décision dans le domaine de l'acquisition d'équipements militaires au sein des forces armées, dans un contexte OTAN; également pour discuter d'éventuels futurs programmes de recherche en collaboration.

Le niveau des présentations et des débats fut excellent et enrichissant. Les sujets traités furent les procédures d'acquisition, la simulation, la sélection et le classement, dans un contexte multicritères, le coût global de possession, l'aide au développement des besoins opérationnels, et l'évaluation des performances. Cependant, on doit noter que des sujets importants, comme:

- Les aspects industriel, social et politique des modèles et méthodes d'acquisition d'équipements militaires,
- La standardisation relative aux modèles d'acquisition d'équipements militaires au sein de l'Alliance,
- Les modèles d'acquisition d'équipements militaires, pour ce qui concerne la gestion de la chaîne d'approvisionnement et la logistique,
- Les modèles théoriques de renouvellement et de projets concernant l'acquisition d'équipements militaires,
- Les modèles de simulation pour les systèmes dynamiques relatifs à l'acquisition d'équipements militaires,
- La gestion de la flotte et les modèles d'acquisition d'équipements militaires.

Ne furent pas traités, ou auraient demandé une discussion plus approfondie.